



SECTION 732

FLARED END SECTIONS

732.1 Description. This work shall consist of furnishing and installing precast concrete or metal flared end sections of the size and shape shown on the plans.

732.1.1 Precast concrete flared end sections shall be used with concrete or vitrified clay culvert pipe.

732.1.2 Metal flared end sections shall be used with metal culvert pipe.

732.1.3 Safety slope end sections may be used with either concrete, plastic or metal culvert pipe.

732.2 Material.

732.2.1 All material shall conform to Division 1000, Materials Details, and specifically as follows:

Item	Section
Metal Flared End Sections	1020
Precast Concrete Flared End Sections	1032
Safety Bars and Longitudinal Bars	ASTM A-53 Schedule 40
Bar Grate	ASTM A575 Grade 1020
Plastic Joint Compound for Vitrified Clay and Concrete Pipe	1057.3
Tubular Joint Seal	1057.4
Mortar for Pipe Joints	1066

732.2.2 If toe walls for precast concrete flared end sections are cast-in-place, they shall be constructed of Class B or B-1 concrete, or concrete of a commercial mixture meeting the requirements of [Sec 501.14](#). Material, proportioning, air-entraining, mixing, slump and transporting of the portland cement concrete shall be in accordance with [Sec 501](#). Air-entrained concrete will not be required. Concrete shall be placed and cured in accordance with the applicable provisions of [Sec 703](#). If toe walls are precast, they may be constructed of any of the above specified concrete mixtures or they may be constructed of the same mixture used to fabricate the precast concrete flared end sections. Precast toe walls may be cured in accordance with [Sec 703](#) or in the same manner as the flared end sections.

732.3 Construction Requirements.

732.3.1 Flared end sections shall be joined to pipes or pipe-arches as shown on the plans. They shall be carefully placed to the line and grade of the structure on a uniformly firm soil foundation shaped to fit the lower part of the end section.

732.3.1.1 Precast Concrete Flared End Sections. The joint material between the end section and the adjoining pipe shall be the same as that used for the pipe joints and shall be installed in the same manner. Toe walls shall be of the size and shape shown on the plans and may be precast or cast-in-place. Forming of cast-in-place toe walls will not be required.

732.3.1.2 Metal Flared End Sections. The end section shall be joined to the pipe or pipe-arch as shown on the plans. The toe plate, if specified, shall be set in a trench or driven to the proper elevation. Care shall be taken to avoid damage to the metal.

732.3.2 Safety Slope End Section. Safety slope end section shall consist of a metal-flared end section, a safety bar system or a bar grate system, toe plate extension, if required in the contract, and any fasteners required for attachment to the culvert pipe.

732.3.2.1 Construction Requirements. Safety slope end sections shall be attached as shown on the plans. They shall be carefully placed to the line and grade of the structure on a uniformly firm soil foundation shaped to fit the lower part of the end section.

732.3.2.2 Toe Plate Extension. The toe plate extension, if required in the contract, shall be attached to the end section as shown on the plans.

732.3.2.3 Safety Bar System. Safety bars are required on end sections used on culvert pipes 24 inch (600 mm) in diameter or greater. The number, size and spacing of safety bars shall be as shown on the plans.

732.3.2.4 Bar Grate System. In lieu of the safety bar system, the bar grate system may be used. If used, the bar grate system shall be fabricated and installed as shown on the plans.

732.4 Basis of Payment. The accepted quantity of flared end sections and safety slope end sections complete in place will be paid for at the contract unit price per each. No direct payment will be made for any excavation or bedding required for placement of the end section, nor for toe walls or toe plates.